

BMI > 85: Anaesthetic Management of a Pregnant Woman with Super Obesity and Complex Co-morbidities Undergoing Category 3 Caesarean Section Delivery.

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Background

Super-obesity in pregnancy (BMI ≥ 60 kg/m²) presents profound **anaesthetic, physiological, and organisational challenges**, with substantially increased maternal peri-operative risk and neonatal morbidity. Published literature demonstrates higher rates of failed neuraxial techniques, airway complications, respiratory failure and ICU admission in this population. This case highlights the **limits of standard obstetric pathways** when applied to women with extreme obesity and underscores the need for **structured, anticipatory, multidisciplinary planning**.

The Case

Case Description

A 27-year-old woman, gravida 2 para 1, with a **BMI >85 kg/m²**, presented for a **Category 3 caesarean section** at 35+5 gestation.

Relevant co-morbidities

Super obesity – Weight unknown.
20 week weight 164kg. Current weight estimated at 200kg
Pre-eclampsia
Gestational diabetes mellitus
Severe lower-limb ulceration and limited mobility
History of cardiovascular instability during previous caesarean section
Lower respiratory tract Infection within the past 4 weeks requiring antibiotic treatment.

Pre-operative and Risk Assessment

Pre-operative anaesthetic assessment identified significant risk factors:

Difficult vascular access

Absent surface landmarks for neuraxial anaesthesia

Severe aortocaval compression risk

Anticipated **respiratory compromise in the supine position**

Planned mitigations

Consultant led care
Verification of **equipment and theatre table weight limits**
Ultrasound-guided vascular access and arterial line insertion
Primary neuraxial technique with two spaces CSE

Anaesthetic Management

Neuraxial Technique

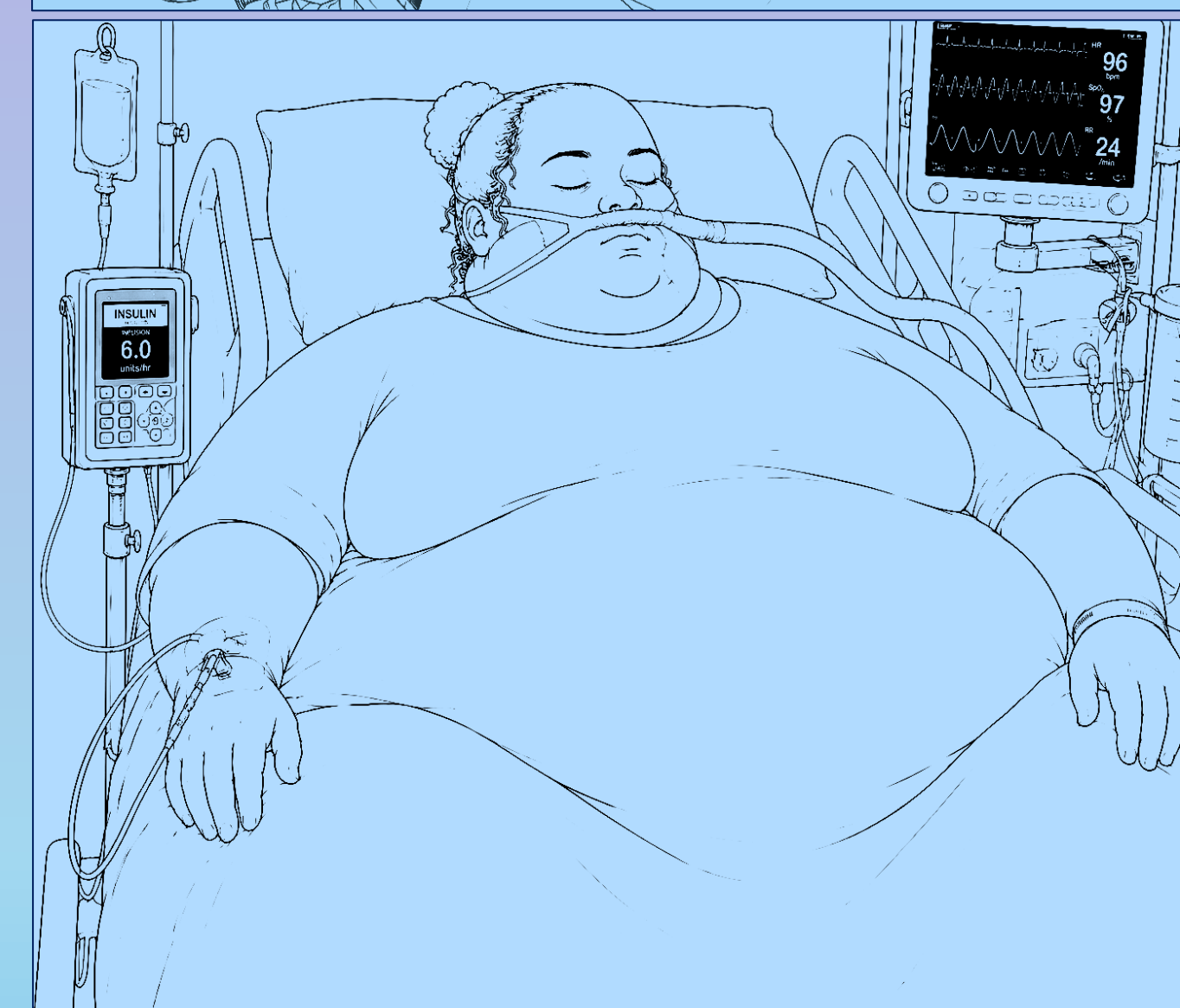
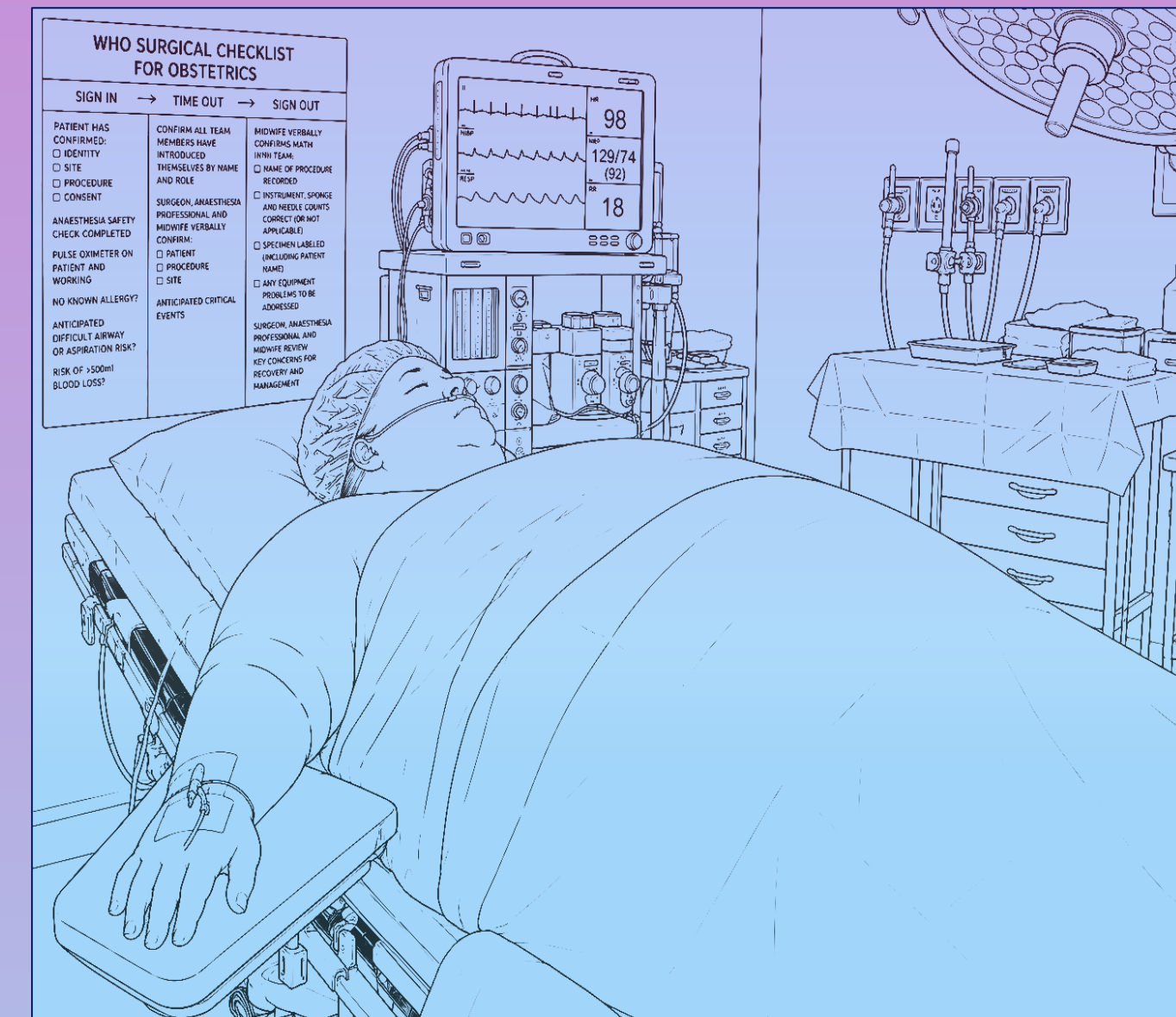
A **combined spinal–epidural (CSE)** was selected for cardiovascular stability and facilitate early supplementation. Epidural catheter placed at T9, Spinal anaesthesia administered at T11 with USS assistance, Dose 2ml 0.5% heavy bupivacaine and 300mcg of diamorphine.

Challenges encountered:

Absent anatomical landmarks
Restricted positioning and difficulty achieving sterility
Requirement for multiple assistants to maintain patient stability

Adjuncts used:

Use of adhesive surgical tape to retract thoracic fold adipose tissue from the midline to facilitate USS scanning.
Ultrasound to identify intervertebral space and depth of interspace.
Eight staff members were required to safely reposition the patient



Intraoperative Challenges

Surgical exposure was severely limited

Commercial retractors (Traxi™ and Alexis® O-ring) were insufficient. Two assistants were required to manually support the pannus throughout surgery
Roles rotated to mitigate staff fatigue

Respiratory and cardiovascular compromise secondary to aortocaval compression and hypoventilation in the supine position
Repeated block checks confirmed block at T3, as a result:

Standard epidural top-up with local anaesthetic was not administered
Delivery occurred **105 minutes after CSE insertion**

Conversion to General Anaesthesia

The patient developed **significant intra-operative pain at 110minutes post CSE insertion**
Urgent epidural loading was attempted with 20mls of 0.5% bupivacaine, ineffective at 20 minutes.

A **controlled conversion to general anaesthesia** was undertaken
Tracheal intubation was achieved without difficulty using video-laryngoscope
Recurrent hypoxia occurred intra-operatively

Post Operative Course

Extubation

The patient was extubated onto high-flow nasal oxygen, Over the next 4 hours she remained dependant on it due to ongoing respiratory compromise.
Post birth she developed **euglycaemic ketoacidosis**, The combination necessitating **inter-hospital transfer to the General Intensive Care Unit** within the trust.
Transfer via ambulance was protracted due to manual handling requirements .
Baby was transferred to NICU for respiratory support.

Critical Care Course

Patient weight post birth confirmed as 208kg, height 156cm, BMI 85.5

Prolonged requirement for high-flow oxygen therapy
2 days admission to the intensive care unit

Inpatient respiratory investigations confirmed:

- **Obstructive Sleep Apnoea**
- **Obesity Hypoventilation Syndrome**

Discussion

This case illustrates how **super-obesity fundamentally alters the risk profile of obstetric anaesthesia**, even when managed by an experienced multidisciplinary team.

Key themes include:

The **unpredictability of neuraxial spread** in extreme obesity
The **physiological intolerance of the supine position**
The **resource-intensive nature** of care delivery
The need for **early escalation thresholds** and system-wide preparedness

Shared Learning and Recommendations

Key Learning Points

Women with BMI ≥ 65 kg/m² require **structured antenatal anaesthetic planning**, not reactive decision-making
Prolonged surgical time and manual retraction should be anticipated

Recommendations for Practice Change

- Development of **National Guidelines** and **local SOPs** for patients categorised as having super-obesity
- **Antenatal referral** to anaesthesia and maternal medicine networks
- Repeat maternal weight at 34 weeks with **re-assessment if BMI increased >10**

References:

- [i] Kim, Tana; Burn, Sabrina C.; Bangdiwala, Ananta; Pace, Samantha; Rauk, Phillip. "Neonatal Morbidity and Maternal Complication Rates in Women With a Delivery Body Mass Index of 60 or Higher." *Obstetrics & Gynecology*, vol. 130, no. 5, 2017, pp. 988–993.
[ii] Nivatpumin, Patchareya; Lertbunnaphong, Tripop; Maneewan, Siritorn; Vittayaprechapon, Nutha. "Comparison of perioperative outcomes and anesthetic-related complications of morbidly obese and super-obese parturients delivering by cesarean section." *Annals of Medicine*, vol. 55, no. 1, 2023, pp. 1037–1046.

Acknowledgements

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